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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XD282

Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to a Wharf Construction Project

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an incidental harassment authorization.

SUMMARY: In accordance with the regulations implementing the Marine Mammal Protection Act (MMPA) as amended, notification is hereby given that we have issued an incidental harassment authorization (IHA) to the U.S. Navy (Navy) to incidentally harass, by Level B harassment only, five species of marine mammals during construction activities associated with a wharf construction project in Hood Canal, Washington.

DATES: This authorization is effective from July 16, 2014, through February 15, 2015.

FOR FURTHER INFORMATION CONTACT: Ben Laws, Office of Protected Resources, NMFS, (301) 427-8401.

SUPPLEMENTARY INFORMATION:

Availability

An electronic copy of the Navy's application and supporting documents, as well as a list of the references cited in this document, may be obtained by visiting the Internet at:

www.nmfs.noaa.gov/pr/permits/incidental.htm. A memorandum describing our adoption of the Navy's Environmental Impact Statement (2011) and our associated Record of Decision, prepared

pursuant to the National Environmental Policy Act, are also available at the same site. In case of problems accessing these documents, please call the contact listed above (see FOR FURTHER INFORMATION CONTACT).

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce to allow, upon request by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified area, the incidental, but not intentional, taking of small numbers of marine mammals, providing that certain findings are made and the necessary prescriptions are established.

The incidental taking of small numbers of marine mammals may be allowed only if NMFS (through authority delegated by the Secretary) finds that the total taking by the specified activity during the specified time period will (i) have a negligible impact on the species or stock(s) and (ii) not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). Further, the permissible methods of taking and requirements pertaining to the mitigation, monitoring and reporting of such taking must be set forth, either in specific regulations or in an authorization.

The allowance of such incidental taking under section 101(a)(5)(A), by harassment, serious injury, death, or a combination thereof, requires that regulations be established. Subsequently, a Letter of Authorization may be issued pursuant to the prescriptions established in such regulations, providing that the level of taking will be consistent with the findings made for the total taking allowable under the specific regulations. Under section 101(a)(5)(D), NMFS may authorize such incidental taking by harassment only, for periods of not more than one year, pursuant to requirements and conditions contained within an IHA. The establishment of

prescriptions through either specific regulations or an authorization requires notice and opportunity for public comment.

NMFS has defined “negligible impact” in 50 CFR 216.103 as “...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.” Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines “harassment” as: “...any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.” The former is termed Level A harassment and the latter is termed Level B harassment.

Summary of Request

On January 10, 2014, we received a request from the Navy for authorization to take marine mammals incidental to pile driving associated with the construction of an explosives handling wharf (EHW-2) in the Hood Canal at Naval Base Kitsap in Bangor, WA (NBKB). The Navy submitted a revised version of the request on April 11, 2014, which we deemed adequate and complete. The Navy plans to continue this multi-year project, involving impact and vibratory pile driving conducted within the approved in-water work window. This IHA covers only the third year (in-water work window) of the project, from July 16, 2014, through February 15, 2015.

The use of both vibratory and impact pile driving is expected to produce underwater sound at levels that have the potential to result in behavioral harassment of marine mammals.

Species with the expected potential to be present during all or a portion of the in-water work window include the Steller sea lion (*Eumetopias jubatus monteriensis*), California sea lion (*Zalophus californianus*), harbor seal (*Phoca vitulina richardii*), killer whale (transient only; *Orcinus orca*), and harbor porpoise (*Phocoena phocoena vomerina*). These species may occur year-round in the Hood Canal, with the exception of the Steller sea lion, which is present only from fall to late spring (approximately late September to early May), and the California sea lion, which is only present from late summer to late spring (approximately late August to early June).

This is the third IHA issued to the Navy for this project. The Navy received IHAs, effective from July 16-February 15, in 2012-13 (77 FR 42279) and 2013-14 (78 FR 43148). Additional IHAs were issued to the Navy in recent years for marine construction projects on the NBKB waterfront. These projects include the Test Pile Project (TPP), conducted in 2011-12 in the proposed footprint of the EHW-2 to collect geotechnical data and test methodology in advance of EHW-2 (76 FR 38361); a two-year maintenance project on the existing explosives handling wharf (EHW-1) conducted in 2011-12 and 2012-13 (76 FR 30130 and 77 FR 43049); and a minor project to install a new mooring for an existing research barge, conducted in 2013-14 (78 FR 43165). In-water work associated with all projects was conducted only during the approved in-water work window (July 16-February 15). Monitoring reports for all of these projects are available on the Internet at www.nmfs.noaa.gov/pr/permits/incidental.htm.

Description of the Specified Activity

Overview

NBKB provides berthing and support services to Navy submarines and other fleet assets. The Navy plans to continue construction of the EHW-2 facility at NBKB in order to support future program requirements for submarines berthed at NBKB. The Navy has determined that

construction of EHW-2 is necessary because the existing EHW alone will not be able to support future program requirements. All piles will be driven with a vibratory hammer for their initial embedment depths, while select piles may be finished with an impact hammer for proofing, as necessary. A maximum of three vibratory drivers and one impact driver may be used simultaneously. Proofing involves striking a driven pile with an impact hammer to verify that it provides the required load-bearing capacity, as indicated by the number of hammer blows per foot of pile advancement. Sound attenuation measures (i.e., bubble curtain) will be used during all impact hammer operations.

Dates and Duration

The allowable season for in-water work, including pile driving, at NBKB is July 16 through February 15, a window established by the Washington Department of Fish and Wildlife in coordination with NMFS and the U.S. Fish and Wildlife Service (USFWS) to protect juvenile salmon. Under this action – which includes only the portion of the project that would be completed under this IHA – a maximum of 195 pile driving days may occur. Pile driving may occur on any day during the in-water work window.

Impact pile driving during the first half of the in-water work window (July 16 to September 15) may only occur between two hours after sunrise and two hours before sunset to protect breeding marbled murrelets (an Endangered Species Act [ESA]-listed bird under the jurisdiction of USFWS). Vibratory driving during the first half of the window, and all in-water work conducted between September 16 and February 15, may occur during daylight hours (sunrise to sunset). Other construction (not in-water) may occur between 7:00 AM and 10:00 PM, year-round. Therefore, in-water work is restricted to daylight hours (at minimum) and there is at least a nine-hour break during the 24-hour cycle from all construction activity.

Specific Geographic Region

NBKB is located on the Hood Canal approximately 32 km west of Seattle, Washington (see Figures 2-1 through 2-4 in the Navy's application). The Hood Canal is a long, narrow fjord-like basin of the western Puget Sound. Throughout its 108-km length, the width of the canal varies from 1.6-3.2 km and exhibits strong depth/elevation gradients and irregular seafloor topography in many areas. Although no official boundaries exist along the waterway, the northeastern section extending from the mouth of the canal at Admiralty Inlet to the southern tip of Toandos Peninsula is referred to as northern Hood Canal. NBKB is located within this region. Please see Section 2 of the Navy's application for detailed information about the specific geographic region, including physical and oceanographic characteristics.

Detailed Description of Activities

Development of necessary facilities for handling of explosive materials is part of the Navy's sea-based strategic deterrence mission. The EHW-2 consists of two components: (1) the wharf proper (or Operations Area), including the warping wharf; and (2) two access trestles. Please see Figures 1-1 and 1-2 of the Navy's application for conceptual and schematic representations of the EHW-2.

For the entire project, a total of up to 1,250 permanent piles ranging in size between 24-48 inches in diameter will be driven in-water to construct the wharf, with up to three vibratory rigs and one impact driving rig operating simultaneously. The overall wharf construction plan also requires temporary installation of up to 150 falsework piles used as an aid to guide permanent piles to their proper locations. Falsework piles, which are removed upon installation of the permanent piles, are likely steel pipe piles and will be driven and removed using a vibratory driver. Pile installation will employ vibratory pile drivers to the greatest extent

possible, and the Navy anticipates that most piles will be able to be vibratory driven to within several feet of the required depth. Difficulties during pile driving may be encountered as a result of obstructions that may exist throughout the project area and, if difficult driving conditions occur, increased usage of an impact hammer will be required.

Exactly what parts or how much of the project will be constructed in any given year is generally undetermined; however, a maximum of 195 days of pile driving may occur per in-water work window. The analysis contained herein is based upon the maximum of 195 pile driving days, rather than any specific number of piles driven. Additional detail regarding construction plans for the project were described in our Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014); please see that document or the Navy's application for more information.

Description of Work Accomplished – During the first in-water work season, the contractor completed installation of 184 piles to support the main segment of the access trestle. Driven piles ranged in size from 24- to 36-in at depths ranging from 0 to 15 m. A maximum of two vibratory pile drivers and one impact hammer were operated concurrently. During the second season, installation of 411 total piles was completed, including all 315 of the wharf deck plumb piles (non-fender) and 24 of the 34 total wharf deck Lead Rubber Bearing (LRB) dolphins (clusters of four piles per dolphin). Installed piles ranged in size from 36- to 48-in at depths ranging from 12-29 m. As before, a maximum two vibratory pile drivers and one impact hammer were operated concurrently.

During the third season, the Navy expects to complete installation of the wharf deck LRBs, piling support for the warping wharf, lightning towers, and trestle deck closure as well as all fender piles. The Navy expects to complete the project in January 2016. The amount of

progress made under this proposed IHA, if issued, would determine necessity of a fourth IHA for the 2015-16 in-water work window.

Comments and Responses

We published a notice of receipt of the Navy's application and proposed IHA in the Federal Register on June 6, 2014 (79 FR 32828). We received comments from the Marine Mammal Commission (Commission), Whale and Dolphin Conservation (WDC), and from two private citizens. The comments and our responses are provided here, and the comments have been posted on the Internet at: www.nmfs.noaa.gov/pr/permits/incidental.htm. Please see the comment letters for full rationale behind the recommendations we respond to below. Before providing responses to the specific recommendations we received, we provide some brief additional information in relation to two points of discussion provided by the Commission separately from their formal recommendations.

Pinniped haul-out behavior may be used to produce correction factors used to ultimately derive a density from numbers of seals observed hauled out during surveys, as described in our Federal Register notice of proposed authorization. First, a correction factor based on the proportion of time seals spend on land versus in the water over the course of a day must be applied to account for animals in the water and not observed during survey counts. This correction allows estimation of total abundance in the survey area and therefore derivation of a density estimate. Next, a correction may be applied secondarily to account for harbor seals that are hauled out at any given moment and therefore unavailable to receive underwater acoustic stimuli that may result in harassment. In this case, we have chosen in consultation with the Navy to apply such a correction factor in arriving at the ultimate density estimate used for take estimation (as described in full in our Federal Register notice of proposed authorization).

Although the Commission limits their formal recommendations in relation to the take estimate for harbor seals to use of the information provided by London et al. (2012) (see below), they also note in their letter that they do not feel use of such a secondary correction factor is appropriate here. We appreciate but disagree with the Commission's comment, and explained our rationale in detail on pages 32853-32854 of the Federal Register notice of proposed authorization.

As noted by the Commission in their current letter, they recommended in a previous letter that we require the Navy to consult with the Washington State Department of Transportation (WSDOT) and/or the California Department of Transportation (Caltrans) to determine if soft start procedures can be used safely with the vibratory hammers used by the Navy in context of this project. Please see page 32843 of our Federal Register notice of proposed authorization for background on this issue. We report here that since publishing our Federal Register notice of proposed authorization, we have successfully facilitated the Navy's discussion with these practitioners (including staff with relevant expertise from the Navy, WSDOT, and Caltrans), with a goal of determining to the extent possible the cause of the technical issues with human safety implications encountered by the Navy and, on the basis of the project specifications, under what circumstances we might expect similar issues to be encountered for other projects. In brief, discussion participants were able to reach the general conclusion that technical requirements of the Navy's EHW-2 project (e.g., relatively large piles in relatively deep water in an area with stiff substrate coupled with regulatory requirements to minimize the use of impact hammers) create a unique (insofar as we could determine) set of circumstances resulting in technical infeasibility of vibratory soft start implementation. The results of this meeting support our determination to not require vibratory soft start for this particular project due to the potential for human safety issues.

The Commission notes concern that the measure may in future be inappropriately eliminated for projects where it is a viable, effective component of a mitigation plan designed to effect the least practicable impact on marine mammals. In response to this concern, we state that we do not plan to cease requiring vibratory soft start procedures for any construction activities other than the current Navy EHW-2 project. We will evaluate the use of the measure on a case-by-case basis, but only from the perspective of potential human safety concerns.

Comment 1: The Commission recommends that we require the Navy to re-estimate the number of harbor seal takes using information from London et al. (2012) rather than Huber et al. (2001) or Jeffries et al. (2003), specifically by using a haul-out correction factor and percentage of time seals are in the water from the more recent work to arrive at a final density estimate.

Response: While the relevant information presented by London et al. (2012) is more recent than that found in Huber et al. (2001) or Jeffries et al. (2003) (i.e., 2002 and 2006 versus 1991-92 and 1999-2000) and the former work was conducted in Hood Canal, as opposed to other locations in Washington inland and coastal waters, we do not believe it appropriate to use that information for this purpose. In brief, relevant information from London et al. (2012) indicates that harbor seals in Hood Canal spend a significantly lower proportion of time ashore than was shown by Huber et al. (2001), as described in the Commission's letter. However, the London et al. (2012) study was not designed to address haul-out behavior, but rather was a foraging ecology study used opportunistically to take advantage of a unique opportunity that arose to examine the impact of exposure to increased killer whale predation on haul-out probability. The authors acknowledge the study limitations and imply caution in application of the results. Several points are worth noting:

- In comparison with the Huber et al. (2001) study, London et al. (2012)'s study design is poorly balanced across study sites (primarily two sites with regular human disturbance versus six different sites separated widely across inland and coastal waters) with a small sample size (29 versus 164).
- London et al. (2012) note that VHF deployments (representing approximately half of total sample size) may be confounded because they were only able to detect hauled animals within approximately 8 km line-of-sight from the Skokomish site, meaning that animals could have hauled out undetected at other sites. Tracking studies and behavioral observations suggest that there is interchange between sites in the Hood Canal.
- The results indicate a higher level of plasticity in haul-out behavior for harbor seals than previously described, underscoring the likelihood that these data regarding proportion of time spent ashore are confounded by human usage characteristics at the two primary study sites (discussed further below).

Further, while it would seem superficially that use of results specific to the Hood Canal may offer greater relevance to the Navy's activity, we believe it likely that the results of Huber et al. (2001) are in fact more indicative of the haul-out behavior that may be exhibited by seals within the project area. All regularly used Hood Canal harbor seal haul-outs (see Figure 4-1 of the Navy's application) are located at significant distance from the NBKB waterfront; seals entering and exiting the water from these haul-outs are not within or near the acoustic harassment zone resulting from the Navy's action. The two primary haul-out sites where London et al. (2012) tagged seals are exposed to human disturbance on a regular basis. The Dosewallips haul-out is located within Dosewallips State Park, a popular area for canoers and kayakers that is also located near a marina and its attendant motorized vessel traffic. The Skokomish site is close to a kayak rental facility and is also regularly used for tribal and commercial fisheries. Given the well-known sensitivity of harbor seals to disturbance, it is likely that this level of human activity results in significant reduction to the proportion of time seals spend ashore. The authors note that their results bear this out, in that the seasonal aspect of human disturbance (there is a noticeable

drop-off in human activity beginning in September and continuing into the fall) correlates well with observed behavior. By October and November, seals exhibited more typical haul-out behavior, but the period of study does not align well with the Navy's period of activity. On the basis of this information, we would expect typical haul-out behavior (i.e., haul-out behavior more similar to that described by Huber et al. (2001)) from mid-fall through the end of the Navy's work period in February (greater than half of the total work period), but London et al. (2012)'s period of study covered the last week of May through the first week of November (with the majority of tags falling off between mid-September and mid-October). Therefore, the study results largely reflect the increased human disturbance of the summer months due to both location and season of study. Due to the distance between the Navy's action area and the regularly used Hood Canal haul-outs, we expect that (1) local behavior of seals at those haul-outs in response to human activity is irrelevant to the Navy's activity and (2) that seals in the Navy's project area will display more typical haul-out behavior in terms of the proportion of time spent ashore.

As a result of the foregoing discussion, we believe it appropriate to retain usage of the information provided by Huber et al. (2001) and Jeffries et al. (2003) for the purpose of estimating take incidental to the Navy's specified activity. However, in consideration of the Commission's view on this issue, we propose to discuss appropriate usage of available information for harbor seals prior to considering any future requests for take authorization in the Hood Canal.

Comment 2: The Commission recommends that we require the Navy to monitor the extent of the Level B harassment zone for vibratory pile driving and removal using additional platform-, shore-, or vessel-based observers beyond the waterfront restricted area to (1)

determine the numbers of marine mammals taken during pile driving and removal activities and (2) characterize the effects on those mammals, including cetaceans.

Response: The Commission provided this recommendation in relation to our proposed IHA for the second year of this project. In summary, we believe that we have developed, in consultation with the Navy, a strategy that is appropriate to accomplish the stated objectives of the Commission's recommendation. For our full rationale supporting this conclusion, please see pages 43155-43156 of our Federal Register notice announcing issuance of that authorization (78 FR 43148; July 19, 2013).

However, in response to the rationale provided by the Commission for this recommendation in their current letter, we agreed to explore with the Navy the feasibility of expanding visual observation coverage of the larger Level B harassment zone through placement of additional shore-based observers. In consultation with the Navy, we identified five potential locations along the NBKB waterfront for evaluation of suitability. We initially ruled out placement of observers on the Toandos Peninsula, along the Hood Canal waterfront opposite the project site (see Figure 2-1 in the Navy's application), because no viable access exists to get an observer onto that shoreline and because the beach area is lost at high tide. To access that area by water, observers would have to clear through Navy security in and out of the Waterfront Restricted Area (WRA) at NBKB, a process that would require up to two hours each way. For reference in describing the five sites (described from north to south), please see Figure 2-2 of the Navy's application.

- Site 1: This is a site located to the north of the existing EHW facility, and is not shown on the Navy's Figure 2-2. The site features a noticeable projection into the Hood Canal and ideally could provide a suitable observation location. However, the site is inaccessible due to security protocols during security convoys used to

move weapons, which would occur on approximately sixty percent of construction days. In addition, this site does not provide sufficient elevation to give observers a reasonable opportunity to see animals (including cetaceans) that may occur in the deeper waters of the Level B harassment zone, meaning that the effective observation zone from this site would be indistinguishable from the WRA area, which is effectively monitored under the existing plan.

- Site 2: Located just north of the existing EHW, the view is obscured to the south by the existing structure, and the site cannot be accessed on days when weapons handling occurs (approximately sixty percent of construction days).

- Site 3: Located between Marginal Wharf and Delta Pier, this site does not offer an useful vantage outside of the WRA. The area viewable from this site is already effectively monitored.

- Site 4: Located south of Delta Pier, this site has a significantly obscured view due to the position of Delta Pier, and also does not offer any useful advantage over existing observation positions.

- Site 5: Site 5 is located on K/B Dock between Delta Pier and the Service Pier and is outside of the floating barrier that delineates the WRA boundary. Along with Site 1, this would seem to offer the best vantage for expanding the visual coverage of the larger Level B harassment zone. However, as for Site 1, there are factors that limit the utility of the site such that we do not believe any benefit offered would be commensurate with cost (e.g., the addition of two observers would cost approximately \$390,000 over the course of this IHA). This location is within a second WRA fenced area for the facilities at Delta Pier and further south along the waterfront. As a result, the view provided is a small water space inside another section of WRA fencing and does not provide a view outside of it and, as for Site 1, the effective observation space would be little different from what is effectively observed within the WRA under the existing plan. Access would be limited during classified activities that take place at K/B Dock, and these activities are often scheduled ad hoc, meaning that we do not have any understanding of when or for what proportion of the project an observer might be able to be stationed at the location.

As a result of the foregoing evaluation of these sites, we do not believe that placement of observers at any of these sites would offer any advantage over the existing monitoring plan.

These sites generally offer limited vantage points and limited access, and the observation that

may be accomplished from the sites would not offer appreciable improvements, compared with the existing monitoring plan, towards accomplishing the objectives stated by the Commission. The Navy currently conducts opportunistic monitoring at many of these locations during non-construction periods, providing data used here to estimate takes for sea lions.

Comment 3: The Commission recommends that we require the Navy to use better methods to estimate the numbers of marine mammals taken rather than the extrapolation method recently used for EHW-2 activities.

Response: The Commission believes that the extrapolation methods used currently in the Navy's required reporting likely produce underestimates of certain species, while potentially overestimating other species, and state that they would be willing to work with us towards accomplishing this recommendation. We appreciate and accept this offer and will discuss the matter with the Commission prior to Navy's submission of reporting required under this IHA.

Comment 4: WDC states that we should deny the request for incidental take authorization due to insufficiencies in mitigation and monitoring, with specific reference to potential effects to transient and resident killer whales and to the potential for Level A incidental take of harbor seals.

Response: The Navy recorded fourteen observations of marine mammals (all harbor seals) within the defined 190-dB exclusion zones (shutdown zones, i.e., 20 m for impact driving and 10 m for vibratory driving) while conducting impact and vibratory pile driving under the year two (2013-14) IHA for the EHW-2 project. Please see the Navy's monitoring report (available at www.nmfs.noaa.gov/pr/permits/incidental.htm) and "Monitoring Results from Previously Authorized Activities" (later in this document) for details. All fourteen of these incidents resulted when individual seals surfaced within the zones, and pile driving activity was

immediately halted in each case. We do not believe that these incidents reflect any insufficiency in the mitigation monitoring program designed with the Navy, and WDC does not present any recommendations as to how the mitigation measures described in this document and included in the Navy's IHA may be improved such that these incidents may have been avoided.

It is also important to note that the shutdown zones were defined in an intentionally precautionary manner. Modeling of these zones using proxy source levels (see Table 3) predicted distances to the 190-dB isopleth of 4.9 and 2.1 m for impact and vibratory pile driving, respectively. The shutdown zone for impact pile driving was increased to 20 m radius on the basis of the maximum distance to the isopleth recorded during acoustic monitoring conducted during the 2011 Test Pile Project (located within the proposed EHW-2 project footprint), while the zone for vibratory driving was increased to 10 m as a strictly precautionary measure. For reference, the average radial distance to the 190-dB isopleths measured during acoustic monitoring was less than 10 m (it is generally difficult to meaningfully specify a distance to isopleths at less than 10 m) and 12 m under the IHAs issued for the Test Pile Project and for year one of the EHW-2 project, respectively (for 36-in piles). During a combined five in-water work seasons for three projects at NBKB over three calendar years (including year one of the EHW-2 project), under the same mitigation monitoring regime described here, no other observations of marine mammals within the defined shutdown zones have been recorded. We believe that placement of an observer in the optimal location for visual observation of the shutdown zone, in concert with additional observers outside the shutdown zone who may communicate animal movements with the observer assigned to the shutdown zone, is the most effective and only feasible way to prevent potential injury of marine mammals. These incidents were not predicted through the take estimation process, and we have no reason to believe that additional incidents

will occur. Please see the “Mitigation” and “Monitoring and Reporting” sections below for further details. We have determined that the mitigation measures described here and included in the Navy’s IHA provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat.

WDC provides additional specific concerns about the effects of the Navy’s activity on transient and resident killer whales. As described in our Federal Register notice of proposed authorization, resident killer whales have not been observed in Hood Canal in over fifteen years, no incidental take of resident killer whales was proposed for authorization and the Navy is not authorized to incidentally take resident killer whales. Transient killer whales have most recently been observed in Hood Canal in 2003 and 2005 and, on the basis of these observations, we proposed and have authorized the incidental take of small numbers of transient killer whales. Given that transient killer whales have not been observed in Hood Canal in nine years, we believe it unlikely that the authorized levels of incidental take will actually occur but have nevertheless authorized the incidental take as a precautionary measure. WDC conflates concerns regarding the adequacy of the mitigation techniques in relation to potential injury of seals with the possibility of additional effects to killer whales. However, no cetacean has ever been observed within the WRA (possibly due to the presence of the port security barrier, approximately 600 m from the project site) and we do not believe that there is reasonable possibility of Level A harassment of any cetacean, even in the absence of the described mitigation and monitoring procedures. With regard to the potential for Level B harassment of resident killer whales, in the unlikely event that a group entered Hood Canal, existing sighting networks (e.g., Orca Network) and the high public profile of these animals mean that such an occurrence would almost certainly be well known and allow the Navy to appropriately restrict

the specified activity such that take of resident killer whales would be avoided. For example, the rare occurrence of a single humpback whale in Hood Canal in 2012 was well-documented.

Comment 5: A private citizen states that we should deny the request for incidental take authorization for the following reasons: (1) failure to analyze the cumulative impacts of the Navy's sonar and noise-producing activities at NBKB; (2) failure to fully disclose project impacts; and (3) the Navy is not a citizen of the United States.

Response: 1. Section 101(a)(5)(D) of the MMPA requires NMFS to make a determination that the harassment incidental to a specified activity will have a negligible impact on the affected species or stocks of marine mammals, and will not result in an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses. Neither the MMPA nor NMFS' implementing regulations specify how to consider other activities and their impacts on the same populations. However, consistent with the 1989 preamble for NMFS' implementing regulations (54 FR 40338; September 29, 1989), the impacts from other past and ongoing anthropogenic activities are incorporated into the negligible impact analysis via their impacts on the environmental baseline (e.g., as reflected in the density/distribution and status of the species, population size and growth rate, and ambient noise).

In addition, cumulative effects were addressed in the Navy's Environmental Impact Statement, as well as in the NEPA analyses prepared for other actions conducted at the NBKB waterfront. These documents, as well as the relevant Stock Assessment Reports, are part of NMFS' Administrative Record for this action, and provided the decision-maker with information regarding other activities in the action area that affect marine mammals, an analysis of cumulative impacts, and other information relevant to the determination made under the MMPA.

2. The comment letter states that the potential exists for a future incident at the EHW-2 to result in an explosion and that, because of the follow-on potential for such a hypothetical explosion to result in the injury or death of a marine mammal, we have not fully disclosed the potential level of take that may occur. However, Section 101(a)(5)(D) of the MMPA requires that we prescribe the permissible methods of taking by harassment pursuant to the specified activity. Here, we specify that Level B harassment of certain species of marine mammal could occur incidental to the Navy's use of impact and vibratory pile driving associated with construction of the EHW-2 during July 16, 2014, through February 15, 2015 only. We have not proposed nor authorized the take of marine mammals in any other manner or by any other means.

3. Section 101(a)(5)(D) of the MMPA allows the authorization of take incidental to a specified activity (other than commercial fishing) only when the activity is conducted by citizens of the United States. Section 3(10) of the MMPA defines the term "person", in part, as "any...department, or instrumentality of the Federal Government...", and NMFS has defined "U.S. citizens" at 50 CFR 216.103 as "individual U.S. citizens or any corporation or similar entity if it is organized under the laws of the United States....", also stating that "U.S. Federal, state and local government agencies shall also constitute citizens of the United States...."

Therefore, the U.S. Navy is appropriately considered a U.S. citizen under the MMPA.

Comment 6: A private citizen states that we should deny the Navy's request for authorization because the Navy has left equipment and hardware in the project area outside the in-water work window without addressing effects from the project outside the in-water work window.

Response: We do not approve or deny the Navy's action, or any component thereof, but rather the incidental take of marine mammals that may occur as a result of the Navy's specified activity. In this case, the specified activity includes impact and vibratory pile driving activity that may occur during July 16, 2014, through February 15, 2015 only. As allowed through other permitting or authorization processes, the Navy may conduct construction activities not considered in-water work year-round, including leaving construction equipment at the site. Although not included in the description of specified activity provided by the Navy in their request for authorization, we have no reason to believe that the presence of this equipment has any potential to result in the incidental take of marine mammals.

Description of Marine Mammals in the Area of the Specified Activity

There are eight marine mammal species with recorded occurrence in the Hood Canal during the past fifteen years, including five cetaceans and three pinnipeds. The harbor seal resides year-round in Hood Canal, while the Steller sea lion and California sea lion inhabit Hood Canal during portions of the year. Harbor porpoises may transit through the project area and occur regularly in Hood Canal, while transient killer whales could be present in the project area but do not have regular occurrence in the Hood Canal. The Dall's porpoise (Phocoenoides dalli), humpback whale (Megaptera novaeangliae), and gray whale (Eschrichtius robustus) have been observed in Hood Canal, but their presence is sufficiently rare that we do not believe there is a reasonable likelihood of their occurrence in the project area during the proposed period of validity for this IHA. The latter three species are not carried forward for further analysis beyond this section.

Table 1 lists the marine mammal species with expected potential for occurrence in the vicinity of NBKB during the project timeframe and summarizes key information regarding stock

status and abundance. We provided additional information for marine mammals with potential for occurrence in the area of the specified activity in our Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014).

Species	Stock	ESA/MMPA status; Strategic (Y/N) ¹	Stock abundance (CV, N _{min} , most recent abundance survey) ²	PBR ³	Annual M/SI ⁴	Relative occurrence in Hood Canal; season of occurrence
Order Cetartiodactyla – Cetacea – Superfamily Odontoceti (toothed whales, dolphins, and porpoises)						
Family Delphinidae						
Killer whale	West coast transient ^{5,6}	-; N	243 (n/a; 2006)	2.4	0	Rare; year-round (but last observed in 2005)
Family Phocoenidae (porpoises)						
Harbor porpoise	Washington inland waters ⁷	-; N	10,682 (0.38; 7,841; 2003)	63	≥2.2	Possible regular presence; year-round
Order Carnivora – Superfamily Pinnipedia						
Family Otariidae (eared seals and sea lions)						
California sea lion	U.S.	-; N	296,750 (n/a; 153,337; 2008)	9,200	≥431	Seasonal/common; Fall to late spring (Aug to Jun)
Steller sea lion	Eastern U.S. ⁵	-; N ⁸	63,160-78,198 (n/a; 57,966; 2008-11) ⁹	1,552 ¹⁰	65.1	Seasonal/occasional; Fall to late spring (Sep to May)
Family Phocidae (earless seals)						
Harbor seal	Washington inland waters ⁷	-; N	14,612 (0.15; 12,844; 1999)	771	13.4	Common; Year-round resident

Table 1. Marine mammals potentially present in the vicinity of NBKB

¹ESA status: Endangered (E), Threatened (T)/MMPA status: Depleted (D). A dash (-) indicates that the species is not listed under the ESA or designated as depleted under the MMPA. Under the MMPA, a strategic stock is one for which the level of direct human-caused mortality exceeds PBR (see footnote 3) or which is determined to be declining and likely to be listed under the ESA within the foreseeable future. Any species or stock listed under the ESA is automatically designated under the MMPA as depleted and as a strategic stock.

²CV is coefficient of variation; N_{min} is the minimum estimate of stock abundance. In some cases, CV is not applicable. For killer whales, the abundance values represent direct counts of individually identifiable animals; therefore there is only a single abundance estimate with no associated CV. For certain stocks of pinnipeds, abundance estimates are based upon observations of animals (often pups) ashore multiplied by some correction factor derived from knowledge of the species' (or similar species') life history to arrive at a best abundance estimate; therefore, there is no associated CV. In these cases, the minimum abundance may represent actual counts of all animals ashore.

³Potential biological removal, defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population size (OSP).

⁴These values, found in NMFS' SARs, represent annual levels of human-caused mortality plus serious injury from all sources combined (e.g., commercial fisheries, subsistence hunting, ship strike). Annual M/SI often cannot be determined precisely and is in some cases presented as a minimum value. All values presented here are from the draft 2013 SARs (www.nmfs.noaa.gov/pr/sars/draft.htm).

⁵Abundance estimates (and resulting PBR values) for these stocks are new values presented in the draft 2013 SARs. This information was made available for public comment and is currently under review and therefore may be revised prior to finalizing the 2013 SARs. However, we consider this information to be the best available for use in this document.

⁶The abundance estimate for this stock includes only animals from the “inner coast” population occurring in inside waters of southeastern Alaska, British Columbia, and Washington – excluding animals from the “outer coast” subpopulation, including animals from California – and therefore should be considered a minimum count. For comparison, the previous abundance estimate for this stock, including counts of animals from California that are now considered outdated, was 354.

⁷Abundance estimates for these stocks are greater than eight years old and are therefore not considered current. PBR is considered undetermined for these stocks, as there is no current minimum abundance estimate for use in calculation. We nevertheless present the most recent abundance estimates and PBR values, as these represent the best available information for use in this document.

⁸The eastern distinct population segment of the Steller sea lion, previously listed under the ESA as threatened, was delisted on December 4, 2013 (78 FR 66140; November 4, 2013). Because this stock is not below its OSP size and the level of direct human-caused mortality does not exceed PBR, this delisting action implies that the stock is no longer designated as depleted or as a strategic stock under the MMPA.

⁹Best abundance is calculated as the product of pup counts and a factor based on the birth rate, sex and age structure, and growth rate of the population. A range is presented because the extrapolation factor varies depending on the vital rate parameter resulting in the growth rate (i.e., high fecundity or low juvenile mortality).

¹⁰PBR is calculated for the U.S. portion of the stock only (excluding animals in British Columbia) and assumes that the stock is not within its OSP. If we assume that the stock is within its OSP, PBR for the U.S. portion increases to 2,069.

Potential Effects of the Specified Activity on Marine Mammals

Our Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014) provides a general background on sound relevant to the specified activity as well as a detailed description of marine mammal hearing and of the potential effects of these construction activities on marine mammals.

Anticipated Effects on Habitat

We described potential impacts to marine mammal habitat in detail in our Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014). In summary, we have determined that given the short daily duration of sound associated with individual pile driving events and the relatively small areas being affected, pile driving activities associated with the proposed action are not likely to have a permanent, adverse effect on any fish habitat, or populations of fish species. Thus, any impacts to marine mammal habitat are not expected to cause significant or long-term consequences for individual marine mammals or their populations.

Mitigation

In order to issue an IHA under Section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and on the availability of such species or stock for taking for certain subsistence uses.

Measurements from similar pile driving events were coupled with practical spreading loss to estimate zones of influence (ZOI; see “Estimated Take by Incidental Harassment”). These values were then refined based on in situ measurements performed during the TPP, for similar pile driving activity and within the EHW-2 project footprint, to develop mitigation measures for EHW-2 pile driving activities. The ZOIs effectively represent the mitigation zone that will be established around each pile to prevent Level A harassment to marine mammals, while providing estimates of the areas within which Level B harassment might occur. While the ZOIs vary between the different diameter piles and types of installation methods, the Navy plans to establish mitigation zones for the maximum ZOI for all pile driving conducted in support of the wharf construction project. In addition to the measures described later in this section, the Navy will employ the following standard mitigation measures:

(a) Conduct briefings between construction supervisors and crews, marine mammal monitoring team, and Navy staff prior to the start of all pile driving activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

(b) For in-water heavy machinery work other than pile driving (using, e.g., standard barges, tug boats, barge-mounted excavators, or clamshell equipment used to place or remove

material), if a marine mammal comes within 10 m, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions. This type of work could include the following activities: (1) movement of the barge to the pile location; (2) positioning of the pile on the substrate via a crane (i.e., stabbing the pile); (3) removal of the pile from the water column/substrate via a crane (i.e., deadpull); or (4) the placement of sound attenuation devices around the piles. For these activities, monitoring will take place from 15 minutes prior to initiation until the action is complete.

Monitoring and Shutdown for Pile Driving

The following measures apply to the Navy's mitigation through shutdown and disturbance zones:

Shutdown Zone – For all pile driving activities, the Navy will establish a shutdown zone intended to contain the area in which SPLs equal or exceed the 180/190 dB rms acoustic injury criteria. The purpose of a shutdown zone is to define an area within which shutdown of activity would occur upon sighting of a marine mammal (or in anticipation of an animal entering the defined area), thus preventing injury of marine mammals. Modeled distances for shutdown zones are shown in Table 3. However, during impact pile driving, the Navy will implement a minimum shutdown zone of 85 m radius for cetaceans and 20 m radius for pinnipeds around all pile driving activity. The modeled injury threshold distances are approximately 22 m and 5 m, respectively, but the distances are increased based on in-situ recorded sound pressure levels during the TPP. During vibratory driving, the shutdown zone will be 10 m distance from the source for all animals. These precautionary measures are intended to further reduce any possibility of acoustic injury, as well as to account for any undue reduction in the modeled zones stemming from the

assumption of 10 dB attenuation from use of a bubble curtain (see discussion later in this section).

Disturbance Zone – Disturbance zones are the areas in which SPLs equal or exceed 160 and 120 dB rms (for pulsed and non-pulsed continuous sound, respectively). Disturbance zones provide utility for monitoring conducted for mitigation purposes (i.e., shutdown zone monitoring) by establishing monitoring protocols for areas adjacent to the shutdown zones. Monitoring of disturbance zones enables observers to be aware of and communicate the presence of marine mammals in the project area but outside the shutdown zone and thus prepare for potential shutdowns of activity. However, the primary purpose of disturbance zone monitoring is for documenting incidents of Level B harassment; disturbance zone monitoring is discussed in greater detail later (see “Monitoring and Reporting”). Nominal radial distances for disturbance zones are shown in Table 3. Given the size of the disturbance zone for vibratory pile driving, it is impossible to guarantee that all animals would be observed or to make comprehensive observations of fine-scale behavioral reactions to sound, and only a portion of the zone (e.g., what may be reasonably observed by visual observers stationed within the WRA) will be monitored.

In order to document observed incidents of harassment, monitors record all marine mammal observations, regardless of location. The observer’s location, as well as the location of the pile being driven, is known from a GPS. The location of the animal is estimated as a distance from the observer, which is then compared to the location from the pile. The received level may be estimated on the basis of past or subsequent acoustic monitoring. It may then be determined whether the animal was exposed to sound levels constituting incidental harassment in post-processing of observational data, and a precise accounting of observed incidents of harassment

created. Therefore, although the predicted distances to behavioral harassment thresholds are useful for estimating harassment for purposes of authorizing levels of incidental take, actual take may be determined in part through the use of empirical data. That information may then be used to extrapolate observed takes to reach an approximate understanding of actual total takes.

Monitoring Protocols – Monitoring will be conducted before, during, and after pile driving activities. In addition, observers shall record all incidents of marine mammal occurrence, regardless of distance from activity, and shall document any behavioral reactions in concert with distance from piles being driven. Observations made outside the shutdown zone will not result in shutdown; that pile segment would be completed without cessation, unless the animal approaches or enters the shutdown zone, at which point all pile driving activities must be halted. Monitoring will take place from fifteen minutes prior to initiation through thirty minutes post-completion of pile driving activities. Pile driving activities include the time to remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving equipment is no more than thirty minutes. Please see the Marine Mammal Monitoring Plan (available at www.nmfs.noaa.gov/pr/permits/incidental.htm), developed by the Navy with our approval, for full details of the monitoring protocols.

The following additional measures apply to visual monitoring:

(1) Monitoring will be conducted by qualified observers, who will be placed at the best vantage point(s) practicable to monitor for marine mammals and implement shutdown/delay procedures when applicable by calling for the shutdown to the hammer operator. Qualified observers are trained biologists, with the following minimum qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Advanced education in biological science or related field (undergraduate degree or higher required);
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times when in-water construction activities were suspended to avoid potential incidental injury from construction sound of marine mammals observed within a defined shutdown zone; and marine mammal behavior; and
- Ability to communicate orally, by radio or in person, with project personnel to provide real-time information on marine mammals observed in the area as necessary.

(2) Prior to the start of pile driving activity, the shutdown zone will be monitored for fifteen minutes to ensure that it is clear of marine mammals. Pile driving will only commence once observers have declared the shutdown zone clear of marine mammals; animals will be allowed to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior

will be monitored and documented. The shutdown zone may only be declared clear, and pile driving started, when the entire shutdown zone is visible (i.e., when not obscured by dark, rain, fog, etc.). In addition, if such conditions should arise during impact pile driving that is already underway, the activity must be halted.

(3) If a marine mammal approaches or enters the shutdown zone during the course of pile driving operations, activity will be halted and delayed until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone or fifteen minutes have passed without re-detection of the animal. Monitoring will be conducted throughout the time required to drive a pile.

Sound Attenuation Devices

Sound levels can be greatly reduced during impact pile driving using sound attenuation devices, including bubble curtains. Bubble curtains were described in detail in our Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014). To avoid loss of attenuation from design and implementation errors, the Navy has required specific bubble curtain design specifications, including testing requirements for air pressure and flow prior to initial impact hammer use, and a requirement for placement on the substrate. We considered TPP measurements (approximately 7 dB overall) and other monitored projects (typically at least 8 dB realized attenuation), and consider 8 dB as potentially the best estimate of average SPL (rms) reduction, assuming appropriate deployment and no problems with the equipment. In looking at other monitored projects prior to completion of the TPP, the Navy determined with our concurrence that an assumption of 10 dB realized attenuation was realistic. Therefore, a 10 dB reduction was used in the Navy's analysis of pile driving noise in the initial environmental analyses for the EHW-2 project. The Navy's analysis is retained here. While acknowledging that

empirical evidence from the TPP indicates that the 10 dB target has not been consistently achieved, we did not require the Navy to revisit their acoustic modeling because (1) shutdown and disturbance zones for the second and third construction years are based on in situ measurements rather than the original modeling that assumed 10 dB attenuation from a bubble curtain and (2) take estimates are not affected because they are based on a combined modeled sound field (i.e., concurrent operation of impact and vibratory drivers) rather than there being separate take estimates for impact and vibratory pile driving.

Bubble curtains shall be used during all impact pile driving. The device will distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column, and the lowest bubble ring shall be in contact with the mudline for the full circumference of the ring. Testing of the device by comparing attenuated and unattenuated strikes is not possible because of requirements in place to protect marbled murrelets (an ESA-listed bird species under the jurisdiction of the USFWS). However, in order to avoid loss of attenuation from design and implementation errors in the absence of such testing, a performance test of the device shall be conducted prior to initial use. The performance test shall confirm the calculated pressures and flow rates at each manifold ring. In addition, the contractor shall also train personnel in the proper balancing of air flow to the bubblers and shall submit an inspection/performance report to the Navy within 72 hours following the performance test.

Timing Restrictions

In Hood Canal, designated timing restrictions exist for pile driving activities to avoid in-water work when salmonids and other spawning forage fish are likely to be present. The in-water work window is July 16-February 15. Until September 23, impact pile driving will only occur starting two hours after sunrise and ending two hours before sunset due to marbled murrelet

nesting season. After September 23, in-water construction activities will occur during daylight hours (sunrise to sunset).

Soft Start

The use of a soft-start procedure is believed to provide additional protection to marine mammals by warning or providing a chance to leave the area prior to the hammer operating at full capacity, and typically involves a requirement to initiate sound from vibratory hammers for fifteen seconds at reduced energy followed by a thirty-second waiting period. This procedure is repeated two additional times. Issues associated with vibratory soft start, specific to the EHW-2 project, were described in detail in our Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014). For this IHA and for the remainder of the EHW-2 project, as a result of the potential risk to human safety, we have determined vibratory soft start to not currently be practicable. Therefore, the measure will not be required. We have further determined this measure unnecessary to providing the means of effecting the least practicable impact on marine mammals and their habitat.

For impact driving, soft start will be required, and contractors will provide an initial set of strikes from the impact hammer at reduced energy, followed by a thirty-second waiting period, then two subsequent reduced energy strike sets. The reduced energy of an individual hammer cannot be quantified because of variation in individual drivers. The actual number of strikes at reduced energy will vary because operating the hammer at less than full power results in “bouncing” of the hammer as it strikes the pile, resulting in multiple “strikes.” Soft start for impact driving will be required at the beginning of each day’s pile driving work and at any time following a cessation of impact pile driving of thirty minutes or longer.

We have carefully evaluated the Navy's proposed mitigation measures and considered their effectiveness in past implementation to determine whether they are likely to effect the least practicable impact on the affected marine mammal species and stocks and their habitat. Our evaluation of potential measures included consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals, (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any mitigation measure(s) we prescribe should be able to accomplish, have a reasonable likelihood of accomplishing (based on current science), or contribute to the accomplishment of one or more of the general goals listed below:

- (1) Avoidance or minimization of injury or death of marine mammals wherever possible (goals 2, 3, and 4 may contribute to this goal).
- (2) A reduction in the number (total number or number at biologically important time or location) of individual marine mammals exposed to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing takes by behavioral harassment only).
- (3) A reduction in the number (total number or number at biologically important time or location) of times any individual marine mammal would be exposed to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing takes by behavioral harassment only).
- (4) A reduction in the intensity of exposure to stimuli expected to result in incidental take (this goal may contribute to 1, above, or to reducing the severity of behavioral harassment only).

(5) Avoidance or minimization of adverse effects to marine mammal habitat, paying particular attention to the prey base, blockage or limitation of passage to or from biologically important areas, permanent destruction of habitat, or temporary disturbance of habitat during a biologically important time.

(6) For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Based on our evaluation of the Navy's planned measures, including information from monitoring of the Navy's implementation of the mitigation measures as prescribed under previous IHAs for this and other projects in the Hood Canal, we have determined that the planned mitigation measures provide the means of effecting the least practicable impact on marine mammal species or stocks and their habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance.

Monitoring and Reporting

In order to issue an IHA for an activity, Section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking". The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for incidental take authorizations must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the proposed action area.

Any monitoring requirement we prescribe should improve our understanding of one or more of the following:

- Occurrence of marine mammal species in action area (e.g., presence, abundance, distribution, density).
- Nature, scope, or context of likely marine mammal exposure to potential stressors/impacts (individual or cumulative, acute or chronic), through better understanding of: (1) Action or environment (e.g., source characterization, propagation, ambient noise); (2) Affected species (e.g., life history, dive patterns); (3) Co-occurrence of marine mammal species with the action; or (4) Biological or behavioral context of exposure (e.g., age, calving or feeding areas).
- Individual responses to acute stressors, or impacts of chronic exposures (behavioral or physiological).
- How anticipated responses to stressors impact either: (1) Long-term fitness and survival of an individual; or (2) Population, species, or stock.
- Effects on marine mammal habitat and resultant impacts to marine mammals.
- Mitigation and monitoring effectiveness.

The Navy submitted a marine mammal monitoring plan as part of the IHA application for year two of this project. It will be applied to year three of this project and can be found on the Internet at www.nmfs.noaa.gov/pr/permits/incidental.htm. The plan has been successfully implemented by the Navy under the previous IHA.

Visual Marine Mammal Observations

The Navy will collect sighting data and behavioral responses to construction for marine mammal species observed in the region of activity during the period of activity. All observers will be trained in marine mammal identification and behaviors and are required to have no other construction-related tasks while conducting monitoring. The Navy will monitor the shutdown zone and disturbance zone before, during, and after pile driving, with observers located at the

best practicable vantage points. Based on our requirements, the Marine Mammal Monitoring Plan would implement the following procedures for pile driving:

- MMOs will be located at the best vantage point(s) in order to properly see the entire shutdown zone and as much of the disturbance zone as possible.
- During all observation periods, observers will use binoculars and the naked eye to search continuously for marine mammals.
- If the shutdown zones are obscured by fog or poor lighting conditions, pile driving at that location will not be initiated until that zone is visible. Should such conditions arise while impact driving is underway, the activity must be halted.
- The shutdown and disturbance zones around the pile will be monitored for the presence of marine mammals before, during, and after any pile driving or removal activity.

Individuals implementing the monitoring protocol will assess its effectiveness using an adaptive approach. Monitoring biologists will use their best professional judgment throughout implementation and seek improvements to these methods when deemed appropriate. Any modifications to protocol will be coordinated between NMFS and the Navy.

Data Collection

We require that observers use approved data forms. Among other pieces of information, the Navy will record detailed information about any implementation of shutdowns, including the distance of animals to the pile and description of specific actions that ensued and resulting behavior of the animal, if any. In addition, the Navy will attempt to distinguish between the number of individual animals taken and the number of incidents of take. We require that, at a minimum, the following information be collected on the sighting forms:

- Date and time that monitored activity begins or ends;
- Construction activities occurring during each observation period;
- Weather parameters (e.g., percent cover, visibility);
- Water conditions (e.g., sea state, tide state);
- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including

bearing and direction of travel and distance from pile driving activity;

- Distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;

- Locations of all marine mammal observations; and
- Other human activity in the area.

Reporting

A draft report will be submitted within ninety calendar days of the completion of the in-water work window. The report will include marine mammal observations pre-activity, during-activity, and post-activity during pile driving days, and will also provide descriptions of any problems encountered in deploying sound attenuating devices, any behavioral responses to construction activities by marine mammals and a complete description of all mitigation shutdowns and the results of those actions and an extrapolated total take estimate based on the number of marine mammals observed during the course of construction. A final report must be submitted within thirty days following resolution of comments on the draft report.

Monitoring Results from Previously Authorized Activities

The Navy complied with the mitigation and monitoring required under the previous authorizations for this project. Marine mammal monitoring occurred before, during, and after each pile driving event. During the course of these activities, the Navy did not exceed the take levels authorized under the IHAs. However, the Navy did record fourteen observations of marine mammals (harbor seals only) within the defined 190-dB shutdown zones. Please see the Navy's monitoring report for details of these incidents (including, specifically, Table 10). Results of acoustic monitoring from the first year of the EHW-2 project were provided in our Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014).

During year two of the EHW-2 project, the Navy recorded four construction delays due to harbor seals observed within or near shutdown zones, and seventeen construction shutdowns, also due to harbor seals surfacing within or near shutdown zones. Of the seventeen shutdowns, the Navy was able to determine that fourteen of these involved animals surfacing within the shutdown zone. In each case, the animals were not observed approaching the zone prior to their emergence within the zone, and the Navy immediately and appropriately halted construction activity as required. With one exception, all animals were subsequently observed outside of the shutdown zone and did not exhibit behaviors consistent with injury or distress. For the one exception, the animal was not resighted and activity was restarted after fifteen minutes, as allowed under the IHA. Twelve of the incidents occurred during impact pile driving, with animals sighted at distances between 9-20 m (mean distance approximately 16 m) from the pile at the time the shutdown was implemented. The remaining two incidents occurred during vibratory pile driving, with both animals sighted at 8 m from the pile. As noted previously under "Comments and Responses", the shutdown zones were defined in an intentionally precautionary manner, and it is not clear that these animals experienced any auditory injury.

In accordance with the 2012 IHA, the Navy submitted a Year 1 Marine Mammal Monitoring Report (2012-2013), covering the period of July 16 through February 15. Due to delays in beginning the project the first day of monitored pile driving activity occurred on September 28, 2012, and a total of 78 days of pile driving occurred between then and February 14, 2013. That total included 56 days of vibratory driving only, three days of only impact driving, and 19 days where both vibratory and impact driving occurred, with a maximum concurrent deployment of two vibratory drivers and one impact driver.

Monitoring was conducted in two areas: (1) primary visual surveys within the disturbance and shutdown zones in the WRA (approximately 500-m radius), (2) boat surveys outside the WRA but within the disturbance zone. The latter occurred only during acoustic monitoring accomplished at the outset of the work period, which required a small vessel be deployed outside the WRA. Marine mammal observers were placed on construction barges, the construction pier, and vessels located in near-field (within the WRA) and far-field (outside the WRA) locations, in accordance with the Marine Mammal Monitoring Plan.

Monitoring for the second year of construction was conducted throughout the 2013-14 work window (i.e., mid-July to mid-February). The monitoring was conducted in the same manner as the first year, but was limited to within the WRA as no acoustic monitoring was conducted during the second year.

Table 2 summarizes monitoring results from years one and two of the EHW-2 project, including observations from all monitoring effort (including while pile driving was not actively occurring) and records of unique observations during active pile driving (seen in the far right column). Primary surveys refer to observations by stationary and vessel-based monitors within the WRA. Boat surveys refer to vessel-based surveys conducted outside the WRA (Year 1 only).

No Steller sea lions have been observed within defined ZOIs during active pile driving, and no killer whales have been observed during any project monitoring at NBKB. For more detail, including full monitoring results and analysis, please see the monitoring reports at www.nmfs.noaa.gov/pr/permits/incidental.htm.

Activity ¹	Species	Total # groups observed	Total # individuals observed	Maximum group size	Total individuals observed (active pile driving and within disturbance zone only)
Primary surveys, Y1	California sea lion	30	30	1	4
	Harbor seal	939	984	4	214
Boat surveys, Y1	California sea lion	21	126	20	22
	Steller sea lion	3	3	1	0
	Harbor seal	73	76	2	22
	Harbor porpoise	10	57	10	36
Primary surveys, Y2	California sea lion	77	83	3	10
	Harbor seal	3,046	3,229	5	713

Table 2. Summary marine mammal monitoring results, EHW-2 Years 1-2

¹Total observation effort during active pile driving: Year 1 – 530 hours, 50 minutes on eighty construction days; Year 2 – 1,247 hours, 27 minutes on 162 construction days.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, section 3(18) of the MMPA defines “harassment” as: “...any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.” The former is termed Level A harassment and the latter is termed Level B harassment.

All anticipated takes would be by Level B harassment resulting from vibratory and impact pile driving and involving temporary changes in behavior. The planned mitigation and monitoring measures are expected to minimize the possibility of injurious or lethal takes such that take by Level A harassment, serious injury, or mortality is considered discountable.

However, it is unlikely that injurious or lethal takes would occur even in the absence of the planned mitigation and monitoring measures.

If a marine mammal responds to a stimulus by changing its behavior (e.g., through relatively minor changes in locomotion direction/speed or vocalization behavior), the response may or may not constitute taking at the individual level, and is unlikely to affect the stock or the species as a whole. However, if a sound source displaces marine mammals from an important feeding or breeding area for a prolonged period, impacts on animals or on the stock or species could potentially be significant (e.g., Lusseau and Bejder, 2007; Weilgart, 2007). Given the many uncertainties in predicting the quantity and types of impacts of sound on marine mammals, it is common practice to estimate how many animals are likely to be present within a particular distance of a given activity, or exposed to a particular level of sound.

This practice potentially overestimates the numbers of marine mammals taken. For example, during the past fifteen years, killer whales have been observed within the project area twice. On the basis of that information, an estimated amount of potential takes for killer whales is presented here. However, while a pod of killer whales could potentially visit again during the project timeframe, and thus be taken, it is more likely that they will not. Although incidental take of killer whales and Dall's porpoises was authorized for 2011-12 and 2012-13 activities at NBKB on the basis of past observations of these species, no such takes were recorded and no individuals of these species were observed. Similarly, estimated actual take levels (observed takes extrapolated to the remainder of unobserved but ensonified area) were significantly less than authorized levels of take for the remaining species. In addition, it is often difficult to distinguish between the individuals harassed and incidences of harassment. In particular, for stationary activities, it is more likely that some smaller number of individuals may accrue a

number of incidences of harassment per individual than for each incidence to accrue to a new individual, especially if those individuals display some degree of residency or site fidelity and the impetus to use the site (e.g., because of foraging opportunities) is stronger than the deterrence presented by the harassing activity.

The project area is not believed to be particularly important habitat for marine mammals, nor is it considered an area frequented by marine mammals, although harbor seals are year-round residents of Hood Canal and sea lions are known to haul-out on submarines and other man-made objects at the NBKB waterfront (although typically at a distance of a mile or greater from the project site). Therefore, behavioral disturbances that could result from anthropogenic sound associated with these activities are expected to affect only a relatively small number of individual marine mammals, although those effects could be recurring over the life of the project if the same individuals remain in the project vicinity.

The Navy requested authorization for the incidental taking of small numbers of Steller sea lions, California sea lions, harbor seals, transient killer whales, and harbor porpoises in the Hood Canal that may result from pile driving during construction activities associated with the wharf construction project described previously in this document. In order to estimate the potential incidents of take that may occur incidental to the specified activity, we first estimated the extent of the sound field that may be produced by the activity and then considered that in combination with information about marine mammal density or abundance in the project area. We provided detailed information on applicable sound thresholds for determining effects to marine mammals as well as describing the information used in estimating the sound fields, the available marine mammal density or abundance information, and the method of estimating potential incidences of take, in our Federal Register notice of proposed authorization (79 FR

32828; June 6, 2014). That information is unchanged, and our take estimates were calculated in the same manner and on the basis of the same information as what was described in the Federal Register notice. Modeled distances to relevant thresholds are shown in Table 3 and total estimated incidents of take are shown in Table 4. Please see Federal Register notice of proposed authorization (79 FR 32828; June 6, 2014) for full details of the process and information used in the take estimation process.

Threshold	Distance ¹	Area (km ²)
Impact driving, pinniped injury (190 dB)	4.9 m	0.0001
Impact driving, cetacean injury (180 dB)	22 m	0.002
Impact driving, disturbance (160 dB) ²	724 m	1.65
Vibratory driving, pinniped injury (190 dB)	2.1 m	< 0.0001
Vibratory driving, cetacean injury (180 dB)	10 m	0.0003
Vibratory driving, disturbance (120 dB) ³	13,800 m	41.4

Table 3. Calculated distance(s) to and area encompassed by underwater marine mammal sound thresholds during pile installation

¹SPLs used for calculations were: 185 dB for impact and 180 dB for vibratory driving.

²Area of 160-dB zone presented for reference. Estimated incidental take calculated on basis of larger 120-dB zone.

³Hood Canal average width at site is 2.4 km, and is fetch limited from N to S at 20.3 km. Calculated range (over 222 km) is greater than actual sound propagation through Hood Canal due to intervening land masses. The greatest line-of-sight distance from pile driving locations unimpeded by land masses is 13.8 km (i.e., the maximum possible distance for propagation of sound).

Hood Canal does not represent open water, or free field, conditions. Therefore, sounds would attenuate as they encounter land masses or bends in the canal. As a result, the calculated distance and areas of impact for the 120-dB threshold cannot actually be attained at the project area. See Figure 6-1 of the Navy's application for a depiction of the size of areas in which each underwater sound threshold is predicted to occur at the project area due to pile driving.

Species	Density	Level A	Level B (120 dB) ¹	Total proposed authorized takes ²
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California sea lion	34 ³	0	6,630	6,630
Steller sea lion	2 ³	0	585	585
Harbor seal	1.06	0	8,580	8,580
Killer whale (transient)	n/a	0	180	180 ⁴
Harbor porpoise	0.149	0	1,170	1,170

Table 4. Number of potential incidental takes of marine mammals within various acoustic threshold zones

¹The 160-dB acoustic harassment zone associated with impact pile driving would always be subsumed by the 120-dB harassment zone produced by vibratory driving. Therefore, takes are not calculated separately for the two zones.

²For species with associated density, density was multiplied by largest ZOI (i.e., 41.4 km). The resulting value was rounded to the nearest whole number and multiplied by the 195 days of activity. For species with abundance only, that value was multiplied directly by the 195 days of activity. We assume for reasons described earlier that no takes would result from airborne noise.

³Figures presented are abundance numbers, not density, and are calculated as the average of average daily maximum numbers per month. Abundance numbers are rounded to the nearest whole number for take estimation. The Steller sea lion abundance was increased to three for take estimation purposes.

⁴We assumed that a single pod of six killer whales could be present for as many as 30 days of the duration.

Analyses and Determinations

Negligible Impact Analysis

NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

A negligible impact finding is based on the lack of likely adverse effects on annual rates of recruitment or survival (i.e., population-level effects). An estimate of the number of Level B harassment takes alone is not enough information on which to base an impact determination. In addition to considering estimates of the number of marine mammals that might be "taken" through behavioral harassment, we consider other factors, such as the likely nature of any responses (e.g., intensity, duration), the context of any responses (e.g., critical reproductive time

or location, migration), as well as the number and nature of estimated Level A harassment takes, the number of estimated mortalities, and effects on habitat.

Pile driving activities associated with the wharf construction project, as outlined previously, have the potential to disturb or displace marine mammals. Specifically, the specified activities may result in take, in the form of Level B harassment (behavioral disturbance) only, from underwater sounds generated from pile driving. Potential takes could occur if individuals of these species are present in the ensonified zone when pile driving is happening, which is likely to occur because (1) harbor seals, which are frequently observed along the NBKB waterfront, are present within the WRA; (2) sea lions, which are less frequently observed, transit the WRA en route to haul-outs to the south at Delta Pier; or (3) cetaceans or pinnipeds transit the larger Level B harassment zone outside of the WRA.

No injury, serious injury, or mortality is anticipated given the methods of installation and measures designed to minimize the possibility of injury to marine mammals. The potential for these outcomes is minimized through the construction method and the implementation of the planned mitigation measures. Specifically, vibratory hammers will be the primary method of installation, and this activity does not have significant potential to cause injury to marine mammals due to the relatively low source levels produced (likely less than 180 dB rms) and the lack of potentially injurious source characteristics. Impact pile driving produces short, sharp pulses with higher peak levels and much sharper rise time to reach those peaks. When impact driving is necessary, required measures (use of a sound attenuation system, which reduces overall source levels as well as dampening the sharp, potentially injurious peaks, and implementation of shutdown zones) significantly reduce any possibility of injury. Given sufficient “notice” through use of soft start (for impact driving), marine mammals are expected

to move away from a sound source that is annoying prior to its becoming potentially injurious. The likelihood that marine mammal detection ability by trained observers is high under the environmental conditions described for Hood Canal further enables the implementation of shutdowns to avoid injury, serious injury, or mortality.

Effects on individuals that are taken by Level B harassment, on the basis of reports in the literature as well as monitoring from past projects at NBKB, will likely be limited to reactions such as increased swimming speeds, increased surfacing time, or decreased foraging (if such activity were occurring). Most likely, individuals will simply move away from the sound source and be temporarily displaced from the areas of pile driving, although even this reaction has been observed primarily only in association with impact pile driving. In response to vibratory driving, harbor seals (which may be somewhat habituated to human activity along the NBKB waterfront) have been observed to orient towards and sometimes move towards the sound. Repeated exposures of individuals to levels of sound that may cause Level B harassment are unlikely to result in hearing impairment or to significantly disrupt foraging behavior. Thus, even repeated Level B harassment of some small subset of the overall stock is unlikely to result in any significant realized decrease in fitness to those individuals, and thus would not result in any adverse impact to the stock as a whole. Level B harassment will be reduced to the level of least practicable impact through use of mitigation measures described herein and, if sound produced by project activities is sufficiently disturbing, animals are likely to simply avoid the project area while the activity is occurring.

For pinnipeds, no rookeries are present in the project area, there are no haul-outs other than those provided opportunistically by man-made objects, and the project area is not known to provide foraging habitat of any special importance (other than is afforded by the known

migration of salmonids generally along the Hood Canal shoreline). No cetaceans are expected within the WRA. The pile driving activities analyzed here are similar to other nearby construction activities within the Hood Canal, including recent projects conducted by the Navy at the same location (TPP and EHW-1 pile replacement project, Years 1-2 of EHW-2; barge mooring project) as well as work conducted in 2005 for the Hood Canal Bridge (SR-104) by the Washington State Department of Transportation, which have taken place with no reported injuries or mortality to marine mammals, and no known long-term adverse consequences from behavioral harassment.

In summary, this negligible impact analysis is founded on the following factors: (1) the possibility of injury, serious injury, or mortality may reasonably be considered discountable; (2) the anticipated incidences of Level B harassment consist of, at worst, temporary modifications in behavior; (3) the absence of any major rookeries and only a few isolated and opportunistic haul-out areas near or adjacent to the project site; (4) the absence of cetaceans within the WRA and generally sporadic occurrence outside the WRA; (5) the absence of any other known areas or features of special significance for foraging or reproduction within the project area; and (6) the presumed efficacy of the planned mitigation measures in reducing the effects of the specified activity to the level of least practicable impact. In addition, none of these stocks are listed under the ESA or designated as depleted under the MMPA. All of the stocks for which take is authorized are thought to be increasing or to be within OSP size. In combination, we believe that these factors, as well as the available body of evidence from other similar activities, including those conducted at the same time of year and in the same location, demonstrate that the potential effects of the specified activity will have only short-term effects on individuals. The specified activity is not expected to impact rates of recruitment or survival and will therefore not result in

population-level impacts. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the proposed monitoring and mitigation measures, we find that the total marine mammal take from Navy's wharf construction activities will have a negligible impact on the affected marine mammal species or stocks.

Small Numbers Analysis

The numbers of animals authorized to be taken for Steller and California sea lions would be considered small relative to the relevant stocks or populations (less than one percent for Steller sea lions and less than three percent for California sea lions) even if each estimated taking occurred to a new individual – an extremely unlikely scenario. For pinnipeds occurring at the NBKB waterfront, there will almost certainly be some overlap in individuals present day-to-day. Further, for the pinniped species, these takes could potentially occur only within some small portion of the overall regional stock. For example, of the estimated 296,500 California sea lions, only certain adult and subadult males – believed to number approximately 3,000-5,000 by Jeffries et al. (2000) – travel north during the non-breeding season. That number has almost certainly increased with the population of California sea lions – the 2000 SAR for California sea lions reported an estimated population size of 204,000-214,000 animals – but likely remains a relatively small portion of the overall population.

For harbor seals, animals found in Hood Canal belong to a closed, resident population estimated at approximately 1,000 animals by Jeffries et al. (2003), and takes are likely to occur only within some portion of that closed population, rather than to animals from the Washington inland waters stock as a whole. The animals that are resident to Hood Canal, to which any incidental take would accrue, represent only seven percent of the best estimate of regional stock

abundance. For transient killer whales, we estimate take based on an assumption that a single pod of whales, comprising six individuals, is present in the vicinity of the project area for the entire duration of the project. These six individuals represent a small number of transient killer whales, for which a conservative minimum estimate of 243 animals is given in the draft 2013 SAR.

Little is known about harbor porpoise use of Hood Canal, and prior to monitoring associated with recent pile driving projects at NBKB, it was believed that harbor porpoises were infrequent visitors to the area. It is unclear from the limited information available what relationship harbor porpoise occurrence in Hood Canal may hold to the regional stock or whether similar usage of Hood Canal may be expected to be recurring. It is unknown how many unique individuals are represented by sightings in Hood Canal, although it is unlikely that these animals represent a large proportion of the overall stock. While we believe that the authorized numbers of incidental take would be likely to occur to a much smaller number of individuals, the number of incidents of take relative to the stock abundance (approximately eleven percent) remains within the bounds of what we consider to be small numbers.

As summarized here, the estimated numbers of potential incidents of harassment for these species are likely much higher than will realistically occur. This is because (1) we use the maximum possible number of days (195) in estimating take, despite the fact that multiple delays and work stoppages are likely to result in a lower number of actual pile driving days; (2) sea lion estimates rely on the averaged maximum daily abundances per month, rather than simply an overall average which would provide a much lower abundance figure; and (3) the estimates for transient killer whales use sparse information to attempt to account for the potential presence of species that have not been observed in Hood Canal since 2005. In addition, potential efficacy of

mitigation measures in terms of reduction in numbers and/or intensity of incidents of take has not been quantified. Therefore, these estimated take numbers are likely to be precautionary. Based on the analysis contained herein of the likely effects of the specified activity on marine mammals and their habitat, and taking into consideration the implementation of the mitigation and monitoring measures, we find that small numbers of marine mammals will be taken relative to the populations of the affected species or stocks.

Impact on Availability of Affected Species for Taking for Subsistence Uses

There are no relevant subsistence uses of marine mammals implicated by this action. Therefore, we have determined that the total taking of affected species or stocks would not have an unmitigable adverse impact on the availability of such species or stocks for taking for subsistence purposes.

Endangered Species Act (ESA)

No marine mammal species listed under the ESA are expected to be affected by these activities. Therefore, we have determined that a section 7 consultation under the ESA is not required.

National Environmental Policy Act (NEPA)

In compliance with the NEPA of 1969 (42 U.S.C. 4321 et seq.), as implemented by the regulations published by the Council on Environmental Quality (CEQ; 40 CFR parts 1500-1508), the Navy prepared an Environmental Impact Statement (EIS) and issued a Record of Decision (ROD) for this project. We acted as a cooperating agency in the preparation of that document, and reviewed the EIS and the public comments received and determined that preparation of additional NEPA analysis was not necessary. In compliance with NEPA, the CEQ regulations, and NOAA Administrative Order 216-6, we subsequently adopted the Navy's EIS

and issued our own ROD for the issuance of the first IHA on July 6, 2012, and reaffirmed the ROD before issuing a second IHA in 2013.

We have reviewed the Navy's application for a renewed IHA for ongoing construction activities for 2014-15 and the 2013-14 monitoring report. Based on that review, we have determined that the proposed action is very similar to that considered in the previous IHAs. In addition, no significant new circumstances or information relevant to environmental concerns have been identified. Thus, we have determined that the preparation of a new or supplemental NEPA document is not necessary, and, after review of public comments, reaffirm our 2012 ROD. The 2012 NEPA documents are available for review at www.nmfs.noaa.gov/pr/permits/incidental.htm.

Authorization

As a result of these determinations, we have issued an IHA to the Navy for conducting the described wharf construction activities in the Hood Canal, from July 16, 2014 through February 15, 2015, provided the previously described mitigation, monitoring, and reporting requirements are incorporated.

Dated: July 16, 2014.

Donna S. Wieting,

Director, Office of Protected Resources,

National Marine Fisheries Service.

